Amendments to the Claims:

The following listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently Amended) A multiple model (MM) radar tracking filter ~~which controls the weighting applied to outputs of first and second model functions responsive to non-Markovian switching logic~~, comprising:

a feed back loop for providing a feedback signal to respective inputs of ~~the~~ first and second model functions responsive to ~~the~~ weighted outputs of the first and second model functions,

wherein the feedback loop provides a feedback signal based on a convex sum of a weighted estimate produced by the MM radar tracking filter, and the MM radar tracking filter controls a weighting to the weighted outputs of the first and second model functions that are responsive to non-Markovian switching logic.

2. (Currently Amended) A multiple model (MM) radar tracking filter ~~which controls the weighting applied to outputs of first and second model functions responsive to non-Markovian switching logic~~, comprising:

a feed back loop for providing a feedback signal to respective inputs of ~~the~~ first and second model functions responsive to ~~the~~ weighted outputs of the first and second model functions,

wherein the feedback loop provides a feedback signal based on a convex sum of a weighted estimate and a weighted covariance produced by the MM radar tracking filter, and the MM radar tracking filter controls a weighting to the weighted outputs of the first and second model functions that are responsive to non-Markovian switching logic.

3. (Currently Amended) A multiple model (MM) radar tracking filter ~~which controls the weighting applied to outputs of first and second model functions responsive to non-Markovian switching logic~~, comprising:

~~the~~ first and second model functions;

non-Markovian switching logic receiving unweighted outputs from the first and second model functions and generating first and second weighting signals;

first and second multipliers generating respective first and second weighted output signals responsive to received ones of the unweighted outputs of the first and second model functions and the first and second weighting signals; and

a feed back loop for providing ~~a~~ feedback signals to respective inputs of the first and second model functions responsive to the weighted outputs of the first and second multipliers,

wherein the feedback loop provides a feedback signal based on a convex sum of a weighted estimate produced by the MM radar tracking filter.

4. (Currently Amended) A multiple model (MM) radar tracking filter ~~which controls the weighting applied to outputs of first and second model functions responsive to non-Markovian switching logic~~, comprising:

~~the~~ first and second model functions;

non-Markovian switching logic receiving unweighted outputs from the first and second model functions and generating first and second weighting signals;

first and second multipliers generating respective first and second weighted output signals responsive to received ones of the unweighted outputs of the first and second model functions and the first and second weighting signals; and

a feed back loop for providing a feedback signal to respective inputs of the first and second model functions responsive to the weighted outputs of the first and second multipliers, wherein the feedback loop provides a feedback signal based on a convex sum of a weighted estimate and a weighted covariance produced by the MM radar tracking filter.

5. (Original) The MM radar tracking filter as recited in claim 4, wherein the MM radar tracking filter is disposed in a radar system.

6. (Original) The MM radar tracking filter as recited in claim 4, wherein the first and second model functions correspond to constant velocity and constant acceleration model functions, respectively.

7. (Currently Amended) A method for operating a multiple model (MM) radar tracking filter ~~which controls the weighting applied to outputs of first and second model functions responsive to non-Markovian switching logic~~, comprising:

generating unweighted outputs from ~~the~~ first and second model functions;

generating first and second weighting signals responsive to the unweighted outputs from the first and second model functions;

applying the weighting signals to the unweighted outputs responsive to non-Markovian switching logic;

generating first and second weighted output signals, respectively, in first and second multipliers responsive to received ones of the unweighted outputs of the first and second model functions and the first and second weighting signals; and

providing a feedback signal to respective inputs of the first and second model functions responsive to the first and second weighted output signals of the first and second multipliers,

wherein the feedback signal is based on a convex sum of a weighted estimate.

8. (Currently Amended) A method for operating a multiple model (MM) radar tracking filter which controls the weighting applied to outputs of first and second model functions responsive to non-Markovian switching logic, comprising:

generating unweighted outputs from ~~the~~ first and second model functions;

generating first and second weighting signals responsive to the unweighted outputs from the first and second model functions;

applying the weighting signals to the unweighted outputs responsive to non-Markovian switching logic;

generating first and second weighted output signals, respectively, in first and second multipliers responsive to received ones of the unweighted outputs of the first and second model functions and the first and second weighting signals; and

providing a feedback signal to respective inputs of the first and second model functions responsive to the first and second weighted output signals of the first and second multipliers,

wherein the feedback signal is based on a convex sum of a weighted estimate and a weighted covariance.

9. (New) The MM radar tracking filter as recited in claim 1, wherein the first and second model functions correspond to constant velocity and constant acceleration model functions, respectively.

10. (New) The MM radar tracking filter as recited in claim 1, wherein the non-Markovian switching logic is an adaptive switching mechanism that employs Alternative Switching Logic.

11. (New) The MM radar tracking filter as recited in claim 2, wherein the first and second model functions correspond to constant velocity and constant acceleration model functions, respectively.

12. (New) The MM radar tracking filter as recited in claim 2, wherein the non-Markovian switching logic is an adaptive switching mechanism that employs Alternative Switching Logic.

13. (New) The MM radar tracking filter as recited in claim 3, wherein the first and second model functions correspond to constant velocity and constant acceleration model functions, respectively.

14. (New) The MM radar tracking filter as recited in claim 3, wherein the non-Markovian switching logic is an adaptive switching mechanism that employs Alternative Switching Logic.

15. (New) The MM radar tracking filter as recited in claim 4, wherein the non-Markovian switching logic is an adaptive switching mechanism that employs Alternative Switching Logic.

15. (New) The MM radar tracking filter as recited in claim 7, wherein the first and second model functions correspond to constant velocity and constant acceleration model functions, respectively.

16. (New) The MM radar tracking filter as recited in claim 7, wherein the non-Markovian switching logic is an adaptive switching mechanism that employs Alternative Switching Logic.

17. (New) The MM radar tracking filter as recited in claim 8, wherein the first and second model functions correspond to constant velocity and constant acceleration model functions, respectively.

18. (New) The MM radar tracking filter as recited in claim 8, wherein the non-Markovian switching logic is an adaptive switching mechanism that employs Alternative Switching Logic.